

Abstract

A fuel injection system (1) having an injection valve (9), a line (5) supplying fuel at high pressure to the injection valve (9) in operation, a control valve (41), which controls the pressure in a control chamber (43) of the injection valve that communicates with the aforementioned line (5), the movable valve part (51) of which control valve is actuatable by an actuator (31) via a hydraulic coupler (38) that has two pistons (39, 40), cooperating with a coupler volume of the coupler, the seat (53) of the movable valve part (51) has an inside cross-sectional area f_3 , with means for filling the coupler volume via guide gaps (65, 67) of the pistons (39, 40) with fuel that is under pressure, is characterized in that the pistons (39, 40) are located parallel to and inside one another; that a booster chamber (72) is located on the ends of the pistons (39, 40) toward the actuator (31); that in the interior of the outer piston (39), a filling chamber (71-2) is provided, which communicates with the aforementioned line (5); that one (39) of the pistons having a cross-sectional area f_4 is mechanically coupled to the actuator (31) via a rod (61) having a cross-sectional area f_5 ; that the other piston (40), which has a piston area f_2 , actuates the control valve (41) via a rod (63) having a cross-sectional area that is smaller than f_2 ; that the direction of the closing motion of the movable valve part (51) matches the direction of fuel flowing out of the control chamber (43), so that the control valve is at least partially force-balanced because of the pressure acting on the further piston (40) in the booster chamber (72).

(Fig.)